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EXAMINER

FERNANDEZ, SUSAN EMILY

ART UNIT	PAPER NUMBER
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1651

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/634,721

Applicant(s)

POWELL ET AL.

Examiner

Susan E. Fernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-61 is/are rejected.
- 7) ☒ Claim(s) 6,25,46 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/5/03.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claims 1-61 are pending and examined on the merits.

Claim Objections

Claims 6, 25, and 46 are objected to because of the following informalities: Each recites “*beta*-1,3;1,4 glucananses” which is the incorrect spelling of the enzyme “*beta*-1,3;1,4 glucanases.” Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-61 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, the claims generically require an enzyme composition that comprises enzymes that are capable of degrading linkages between sugar moieties of succinoglycan. However, the specification does not contain an adequate description for the entire scope of this limitation.

M.P.E.P. § 2163 indicates that: “An applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as

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words, structures, figures, diagrams, and formulas that fully set forth the claimed invention...

one must define a compound by 'whatever characteristics sufficiently distinguish it'. A lack of adequate written description issue also arises if the knowledge and level of skill in the art would not permit one skilled in the art to immediately envisage the product claimed from the disclosed process."

In the instant case, it is unclear of which of any and all enzymes would possess the capability of degrading linkages between sugar moieties of the succinoglycan. The disclosure specifies that "one having ordinary skill in the art, with the benefit of this disclosure, will recognize the enzyme, or mixture of enzymes, to use in the enzyme compositions of the present invention to achieve the desired result" (page 7, paragraph [018]). However, the examples in the specification do not state which specific enzymes actually do degrade the linkages between sugar moieties of the succinoglycan. For instance, see the example on page 10, paragraph [028], which only states "an enzyme composition of the present invention" without indicating the specific enzymes included in said composition.

MPEP § 2163 also provides that: "The written description for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice ..., reduction to drawings ..., or by disclosure of relevant identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus" (Citation omitted.)

Beta-glucanases are described as preferred enzymes in the enzyme composition of the invention, however, even a specifically named enzyme such as 1,4-(1,3;1,4)-*beta*-D-glucanohydrolase is noted as an enzyme that “may be useful” (page 7, paragraph [018]). Therefore, it is unclear if the enzymes discussed in the specification successfully degrade linkages between sugar moieties of the succinoglycan. Moreover, according to Abe et al. (Agric. Biol. Chem., 1980, 44(8): 1877-1884), “succinoglycan is resistant to several known beta-D-glucanases” (page 1877, first column, second paragraph). Therefore, the claimed genus (beta-D-glucanases) do not share the same function of degrading succinoglycan, and thus it is unclear from the application as filed which of any and all beta-D-glucanases could successfully degrade succinoglycan. The application as filed provides no instruction that would allow one of ordinary skill in the art to discern which beta-D-glucanases, or any kind of enzyme for that matter, can successfully degrade succinoglycan. Thus, a holding of lack of written description is clearly required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 13, 16-18, 20-37, 39, 40, 47, 53, and 58-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7, 26, and 47 are rendered indefinite by the recitation “1,4-(1,3;1,4)- β -D-glucan 4-glucanohydrolase.” It is unclear what known enzyme is defined by this recitation. It appears

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that “1,3;1,4- β -glucan 4-glucanohydrolase” is the appropriate name for this enzyme. See <http://www.chem.qmul.ac.uk/iubmb/enzyme/EC3/2/1/73.html>.

Claims 13, 28, 53, 60, and 61 are indefinite since line 1 of each claim recites “the enzyme” which lacks antecedent basis. Parent claims 1, 20, 41, and 37 each require an enzyme composition that comprises “enzymes,” thus it is unclear which of the multiple enzymes of the enzyme composition is considered “the enzyme.”

Claims 16 and 31 are indefinite since each recite “the treatment fluid” which lacks antecedent basis. It is suggested that “the treatment fluid” be replaced with “the viscosified treatment fluid.”

Claims 17, 32, and 40 are rendered indefinite by the recitation “desired portion of the filter cake.” It is unclear how one would determine what portion of the filter cake is “desired.” Moreover, the definition of “desired” is unclear.

Claim 18 is rendered indefinite by the recitation “the viscosified treatment fluid” since it lacks antecedent basis. Parent claims 1 and 15 do not recite any “viscosified treatment fluid.” Thus, it is unclear the relation between the “viscosified treatment fluid” and the steps recited in claim 1.

Claim 20 is rendered indefinite by the recitation “desired time” since it is unclear what would be considered a time that is desired. Moreover it is unclear what effect is “desired.” Thus, claims 20-32 are rejected under 35 U.S.C. 112, second paragraph.

Claim 33 is indefinite since it is unclear how the step of “providing a filter cake that does not comprise succinoglycan” relates to any of the other steps recited in the claim. It is unclear whether the filter cake ever comes into contact with the viscosified treatment fluid or the enzyme

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composition, nor is it clear whether the filter cake is placed into a wellbore penetrating a subterranean formation. Furthermore, it is unclear what is considered a “desired time.” As discussed above, it is unclear what constitutes a “desired time.” Thus, claims 33-36 are rejected under 35 U.S.C. 112, second paragraph.

Claim 35 is rendered indefinite by the recitation “substantially impervious to the enzyme” since it is unclear to what extent the polysaccharide can be impervious to the enzyme in order for it to be considered “substantially impervious.” Furthermore, the recitation “the enzyme” lacks antecedent basis since parent claim 33 requires an enzyme composition comprising “enzymes.” It is unclear which of the multiple enzymes in the composition is considered “the enzyme.”

Claim 36 is rendered indefinite by the recitation “derivatized” following the first recitation of “guars” at line 2 of the claim. It appears that the comma following this recitation of “derivatized” should be deleted, such that the recitation “derivatized, guars” be replaced with “derivatized guars.” Additionally, the recitation “the polysaccharide” lacks antecedent basis since parent claim 33 does not recite a “polysaccharide.”

Claim 37 is indefinite since it recites “the steps” but only appears to recite a single step (contacting the filter cake with an enzyme composition). Thus, claims 37-40 and 58-61 are rejected under 35 U.S.C. 112, second paragraph. It is suggested that “the steps” be replaced with “the step.”

Claim 39 is rendered indefinite by the recitation “slow-release” since it is not clear what rate of release would be considered “slow.”

Claims 58-61 are indefinite since the recitation “the composition” lacks antecedent basis. It is unclear that “the composition” is the “enzyme composition that comprises enzymes that are capable of degrading linkages between sugar moieties of the succinoglycan” recited in claim 37.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 9, 10, 41-46, 49, 50, 55, and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Harada (Methods in Carbohydrate Chemistry, 1994, Vol. X, pages 155-163).

Harada discloses a method of degrading the polysaccharide succinoglycan wherein succinoglycan is hydrolyzed by succinoglycan depolymerase (page 115, second paragraph and page 160, last paragraph). Note that succinoglycan depolymerase degrades the (1→4)-beta-D-glucosidic linkages (Figure 1 on page 156). Thus, a composition comprising a succinoglycan depolymerase and its use in degrading succinoglycan as taught by Harada meets limitations recited in instant claims 1-5, 6 (beta-1,4 glucanases), 9 (mixture of solid and liquid), 10 (purified form, see page 158, last paragraph through page 159, third paragraph), 41-45, 46 (beta-1,4 glucanases), 49 (mixture of solid and liquid), 50 (purified form), 55, and 58 (mixture of solid and liquid).

Furthermore, following degradation of succinoglycan with succinoglycan depolymerase, the resulting mixture may be further degraded by endo-(1→6)-beta-D-glucanase (page 157, “Successive Digestion of Polysaccharides with Succinoglycan Depolymerase and Endo-(1→6)-beta-D-glucanase”). Since there is no separation step following treatment of succinoglycan with succinoglycan depolymerase, the mixture obtained after the addition of endo-(1→6)-beta-D-glucanase is considered an enzyme composition comprising succinoglycan depolymerase and

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endo-(1→6)-beta-D-glucanase which are each capable of degrading linkages between sugar moieties of the succinoglycan. Thus, an additional limitation of instant claim 46 (beta-1,6 glucanases) is taught by the reference. Note that endo-(1→6)-beta-D-glucanase is in the purified form (page 159, last paragraph through page 160, third paragraph). A holding of anticipation is clearly required.

Claims 1-6, 9, 10, 41-46, 49, 50, 55, and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by Dumitriu (Polysaccharides in Medicinal Applications, 1996, page 41-42).

Dumitriu teaches that in one study, strain M64 of Flavobacterium was isolated as a strain of bacteria which uses succinoglycan as the sole carbon source. See page 41, "C. Successive Hydrolysis of Succinoglycan by Two Specific Enzymes." Researchers determined that this particular strain produces extracellular succinoglycan depolymerase and intracellular endo-(1→6)-beta-D-glucanase which hydrolyze succinoglycan (see Figure 13 on page 41).

Succinoglycan depolymerase is considered a beta-1,4 glucanase since it "hydrolyzes the beta-D-galactosyl-(1→4)-glucose linkage" (page 42, last paragraph). Moreover, the tetrasaccharides obtained from the hydrolysis of succinoglycan by the enzymes discussed above are further hydrolyzed by other intracellular enzymes in order to obtain glucose and galactose. Thus the strain M64 organism is considered an enzyme composition comprising enzymes capable of degrading linkages between sugar moieties of the succinoglycan. In sum, the reference teaches the limitations of instant claims 1-5, 6 (beta-1,4 glucanases, beta-1,6 glucanases), 9 (mixture of solid and liquid), 10 (whole cells), 41-45, 46 (beta-1,4 glucanases, beta-1,6 glucanases), 49

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(mixture of solid and liquid), 50 (whole cells), 55, and 58 (mixture of solid and liquid). A holding of anticipation is clearly required.

Claims 1-7, 9, 10, 41-47, 49, 50, 55, and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by York et al. (Proc. Natl. Acad. Sci. USA, 1998, 95: 4912-4917).

York et al. teaches enzymes ExoK and ExsH which are endo-1,3-1,4-beta-glycanases (page 4912, last sentence). When these enzymes were added to *R. meliloti* cells, succinoglycan from these cells were cleaved, though it is noted that ExoK and ExsH do not efficiently cleave succinoglycan that is present in cell-free culture supernatants (page 4916, first column, last paragraph). Nevertheless, the depolymerization of succinoglycan of *R. meliloti* cells by ExoK and ExsH meets the requirements of the claims under examination. Specifically, the reference teaches the limitations of instant claims 1-5, 6 (beta-1,4 glucanases, beta-1,3 glucanases, beta-1,3;1,4 glucanases), 7, 9 (mixture of solid and liquid), 10 (purified, see page 4914, first column, first paragraph), 41-45, 46 (beta-1,4 glucanases, beta-1,3 glucanases, beta-1,3;1,4 glucanases), 47, 49 (mixture of solid and liquid), 50 (purified), 55, and 58 (mixture of solid and liquid). Thus, a holding of anticipation is clearly required.

Claims 1, 2, 8-12, 14-17, 20, 21, 27, 29-32, 37-42, 48-52, 55, 58, and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Harris et al. (WO 00/57022).

Harris et al. discloses a method of dissolving material within an underground reservoir wherein a treatment fluid comprising a polymer breaker is introduced into the reservoir (claim 1). The polymer breaker may be an enzyme which can hydrolyze succinoglycan (claim 14).

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This type of polymer breaker is used to “reduce the viscosity of polysaccharide thickened compositions or to disrupt filter cakes” (page 8, lines 11-19). Polysaccharide thickened compositions are considered to be “viscosified treatment fluid.” Note also that the polysaccharide thickened composition can be considered a fracturing fluid (page 1, lines 8-11). Thus, Harris et al. teaches the limitations of instant claims 1, 2, 9 (liquid), 10 (purified), 14-17, 20, 21, 29, 30, 31, 32, 37, 40, 41, 42, 49 (liquid), 50 (purified), 55, and 58 (liquid).

Moreover, the reference teaches the limitations of instant claims 8, 11, 12, 27, 38, 39, 48, 51, 52, and 59. See claim 29 (for instant claims 8, 12, 27, 48, 52, and 59); page 7, lines 14-18 (chelating agents such as EDTA for instant claims 11 and 51); and page 7, lines 17-23 (for instant claims 38 and 39). A holding of anticipation is clearly required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. in view of Harada or Dumitriu or York et al. and further in view of Parlar et al. (US 2001/0036905), Tjon-Joe-Pin et al. (US 5,247,995), and Fisk, Jr. et al. (US 5,555,937).

As discussed above, Harris et al. anticipates claims 1, 2, 8-12, 14-17, 20, 21, 27, 29-32, 37-42, 48-52, 55, 58, and 59. However, Harris et al. does not expressly disclose that the enzyme for hydrolyzing succinoglycan is an enzyme of the classification 3.2, from the trans-glycosidase superfamily, or a beta-glucanase.

Nevertheless, Harada and Dumitriu each teach enzymes for hydrolyzing succinoglycan which meet the limitations of claims 3-6, 22-25, 43-46, 56, and 57 under examination. In Harada, see page 115, second paragraph and page 160, last paragraph, Figure 1 on page 156, and page 157, "Successive Digestion of Polysaccharides with Succinoglycan Depolymerase and Endo-(1→6)-beta-D-glucanase." In Dumitriu, see page 41, "C. Successive Hydrolysis of Succinoglycan by Two Specific Enzymes," Figure 13 on page 41, and page 42, last paragraph. For more specifics, see discussion in the previous section.

Furthermore, York et al. teaches enzymes for hydrolyzing succinoglycan which meet the limitations of claims 3-7, 22-26, 43-47, 56, and 57 under examination. See discussion in the previous section.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have used the enzymes taught by Harada or Dumitriu or York et al. in the

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methods of Harris et al. since these enzymes successfully hydrolyze succinoglycan. Thus, these references render the limitations of claims 1-5, 6 (beta-1,4 glucanases, beta-1,6 glucanases, beta-1,3 glucanases, beta-1,3;1,4 glucanases), 7-12, 14-17, 20-24, 25 ((beta-1,4 glucanases, beta-1,6 glucanases, beta-1,3 glucanases, beta-1,3;1,4 glucanases), 26, 27, 30-32, 37-45, 46 ((beta-1,4 glucanases, beta-1,6 glucanases, beta-1,3 glucanases, beta-1,3;1,4 glucanases), 47-52, and 55-59 obvious.

Additionally, it would have been obvious to have used the enzymes in various forms (solid, liquid, emulsion, mixture thereof, purified, partially purified, whole cells, whole cell lysates) since one of ordinary skill in the art would have expected that the enzymes would have remained active regardless of the form of the enzyme. Thus, all limitations recited in claims 8-10, 27, 48-50, and 58 are rendered obvious by the references.

Harris et al. also differs from the claims in that it does not teach that the enzyme-containing polymer breaker further comprises glycerol, salts, bactericides, microbiocides, surfactants, or foaming agents.

Parlar et al. teaches the injection into a wellbore of breakers which are used to "...break viscosifying agents present in at least one of the filter cake or the carrier fluid" (page 4, paragraph [0039]). The breaker solution may comprise a chelating agent and hydrochloric acid (page 4, paragraph [0040]). Alternatively, a carrier fluid may be used to remove the filter cake (page 4, paragraph [0042]), wherein the carrier fluid can comprise of a chelating agent or may contain surfactants, salts, and bactericides (page 4, paragraph [0043]).

Tjon-Joe-Pin et al. teaches a method of degrading damaging material, such as filter cakes and very viscous fluid, within a subterranean formation of a well bore using an enzyme treatment

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(abstract). Specifically, one of the methods of Tjon-Joe-Pin et al. requires removal of a polysaccharide-containing filter cake by an enzyme treatment which attacks only specific linkages within the filter cake (claim 2). Moreover, the polysaccharide-containing filter cake is selected from the following: guar, derivatized guar, cellulose, derivatized celluloses, starches, derivatized starches, xanthans, and derivatized xanthans (claim 3). Furthermore, the enzyme treatment may comprise the following additives: surfactants, chelating agents, and foaming agents (column 8, lines 39-42).

Fisk, Jr. et al. discloses pipe release agents which act by attacking a mud filter cake in a stuck pipe (column 2, lines 18-22). An example of a pipe release agent is one based on glycerol (column 2, lines 31-33).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have included the agents disclosed in Parlar et al., Tjon-Joe-Pin et al., and Fisk, Jr. et al. in the treatment fluid disclosed by Harris et al. One of ordinary skill would have been motivated to do this since these agents all assist in degrading filter cakes or viscosified treatment fluids present in a wellbore. Thus, the references render claims 11, 18, 19 and 51 obvious.

Additionally, note that the references render claims 33-36 and 54 obvious. As discussed above, Tjon-Joe-Pin et al. discloses an enzyme treatment for degrading damaging material within a subterranean formation of a well bore wherein the enzyme treatment degrades guar, celluloses, etc., in a filter cake. It is obvious that if a treatment fluid solely comprising an enzyme that hydrolyzes succinoglycan is used, this treatment fluid would not have any effect on fluid cake which do not comprise of succinoglycan. As noted in Tjon-Joe-Pin et al., the particular enzyme used in a wellbore enzyme treatment is specific to a particular type of

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polysaccharide (abstract), and thus, a treatment comprising a hydrolase for succinoglycan would not have an effect on filter cakes comprising other polysaccharides with different linkages, such as those recited in instant claim 36 and discussed in the Tjon-Joe-Pin et al.

Finally, the selection of specific suitable concentrations of enzymes in the Harris treatment fluid, including those claimed, clearly would have been an obvious matter of optimization on the part of the artisan of ordinary skill, particularly since the appropriate concentration of enzyme for treatment depends on the concentration of succinoglycan present in the filter cake/"viscosified treatment fluid." Thus, claims 13, 28, 53, 60, and 61 are rendered obvious by the references.

A holding of obviousness is clearly required.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan E. Fernandez whose telephone number is (571) 272-3444. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan E. Fernandez
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Art Unit 1651

sef



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PRIMARY EXAMINER